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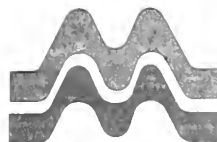
BIG HORN AND DECKER  
MINE WORKER SURVEY REPORT

by  
Janet E. Hooper and Kristi M. Branch

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MINE WORKER SURVEY REPORT

by  
Janet E. Hooper and Kristi M. Branch

Prepared for:  
Montana Department of State Lands

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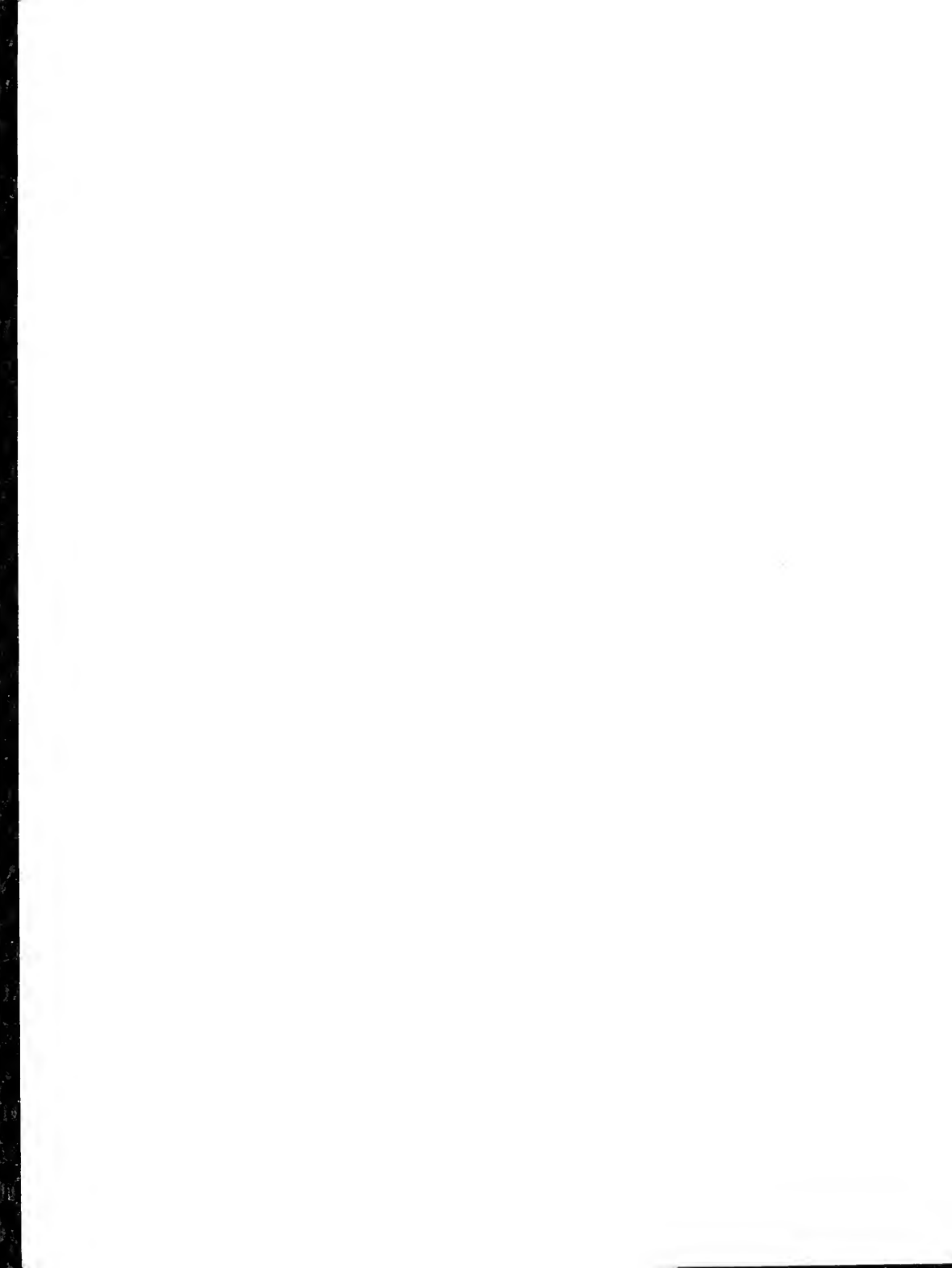
# TABLE OF CONTENTS

	<u>Page</u>
1. Introduction . . . . .	1
2. Personal and Occupational Characteristics of Workers . . . . .	4
3. Family and Housing Characteristics . . . . .	14
4. Residential and Occupational Mobility. . . . .	25
5. Crosstabulations on Demographic Variables. . . . .	38
6. Participation in Recreational Activities . . . . .	55
7. Comparison Between the 1962 and 1977 Worker Survey . . . . .	59
8. Summary and Conclusions. . . . .	61
9. Survey Methodology . . . . .	63



# LIST OF TABLES

Table	Page
1 Age of Workers . . . . .	5
2 Educational Level of Workers . . . . .	6
3 Job Classification of Workers. . . . .	7
4 Male/Female Distribution of Workers. . . . .	8
5 Tribal Membership of Workers . . . . .	9
6 Place of Residence of Workers. . . . .	10
7 Length of Residence in Area of Workers . . . . .	12
8 Marital Status of Workers. . . . .	15
9 Household Composition of Workers . . . . .	16
10 Number of Children 18 and under in worker Households . . . . .	17
11 Household Size of Workers. . . . .	18
12 Number Full-time Employed Persons Per Household. . . . .	19
13 Occupation of Spouses of workers . . . . .	20
14 Housing Type of Workers. . . . .	22
15 Housing Type and Preference of Workers Who Do Not Prefer Current Housing (All Workers). . . . .	23
16 Prior Occupation of Workers. . . . .	26
17 Current Occupational Category by Prior Occupation (All Workers). . . . .	28
18 Location of Prior Employment of Workers. . . . .	30
19 Residence of Workers Prior to Employment . . . . .	32
20 Current Place of Residence by Place of Residence Prior to Employment (All Workers). . . . .	33
21 Workers Previously Employed at Other Coal Mines in Area. . . . .	35
22 Method of Transportation of workers. . . . .	36
23 Size of Carpools . . . . .	37
24 Marital Status by Length of Residence in Community (All workers). . . . .	39
25 Occupation by Length of Residence in Community (All Workers). . . . .	41
26 Education by Length of Residence in Community (All workers). . . . .	43
27 Place of Residence by Length of Residence in Community (All Workers). . . . .	44
28 Number of Children at Home by Length of Residence in Community (All workers). . . . .	45
29 Type of Housing by Length of Residence in Community (All Workers). . . . .	46
30 Employment Status of Spouse by Length of Residence in Community (All Workers). . . . .	47
31 Occupation of Married and Unmarried Workers (All workers). . . . .	48
32 Place of Residence, Married and Unmarried Workers (All Workers). . . . .	49
33 Type of Housing, Married and Unmarried workers (All Workers). . . . .	50
34 Number of Children in Household, Married and Unmarried Workers (All Workers). . . . .	51
35 Employment Status of Spouse by Education of worker (All Workers). . . . .	52
36 Employment Status of Spouse by Number of Children in Household (All Married Workers). . . . .	53
37 Employment Status of Spouse by Presence of Children under Age 5 (All workers). . . . .	54
38 Non-Participation in Recreational Activities . . . . .	56
39 Participation One to Ten Times per Year in Recreational Activities . . . . .	57
40 Participation More than Ten Times per Year in Recreational Activities. . . . .	58
41 Response Rate Mine Worker Surveys. . . . .	67





## 1. INTRODUCTION

The Big Horn and Decker mines, operated by Peter Kiewit Sons, Inc. (PKS), are located near the Montana/Wyoming border, along the wandering Tongue River and the Tongue River Reservoir. The Big Horn Mine is in Wyoming just north of Sheridan, and the Decker mines lie northeast over the border in Montana (see Figure 1).

The southeast Montana/northeast Wyoming area consists primarily of open rangeland. Land use is mostly cattle ranching and dryland farming. Northeastern Wyoming includes the city of Sheridan (population of 15,146) and several smaller cities and rural towns. Southeastern Montana includes few scattered rural towns and the Crow Indian Reservation. Water is scarce and valued.

This report covers three sites with respect to these mines: the Decker East and Decker West mines combined, the Big Horn Mine, and the Sheridan support staff. The latter is located in the administrative office in Sheridan, a center for administrative and other services provided for the Decker and Big Horn mines.

The Big Horn Mine began surface mining near Hidden Water in 1944, six miles north of its present site. In 1956, mining activities were moved to their present location. In 1982, 241 employees mined 3 million tons of coal at the Big Horn Mine.

The Decker mines are relatively new; construction began on West Decker in 1972 and on East Decker in 1977. In 1982, 10.7 million tons of coal were produced at these combined sites, and 515 persons were employed.

Most personnel at both mines reside in Sheridan or the smaller towns surrounding it and travel to work in either personal or company vehicles. Very few reside in Decker or the more scattered Montana towns because housing and community services remain scarce there. Many workers (as well as other residents) find it a source of irritation to work in one state (where they must pay taxes) while residing in another.

The main purpose of this survey was to gain information concerning basic characteristics of the mining work force in this area. Little has been compiled previously on these workers, and information is needed to help evaluate their impacts upon the communities and their residents.

The survey was conducted in November 1982 as part of the Decker Area Mines Comprehensive Social Science Study, sponsored by the Montana Department of State Lands and the U.S. Office of Surface Mining. The methodology followed in the survey is described in Chapter 9. A total of 438 workers responded to the survey; the overall response rate was 86.2 percent.

The report is organized into nine chapters. Chapter 2 presents the personal and occupational characteristics of the workers at the three sites. Chapter 3 describes the family and housing characteristics of the workers, while Chapter 4 presents the results of questions concerning residential and occupation mobility, prior experience in mining, and transportation characteristics. Chapter 5 analyzes the relationships between selected demographic characteristics and length of residences, working status of the spouse and of married and unmarried workers. Chapter 6 presents information

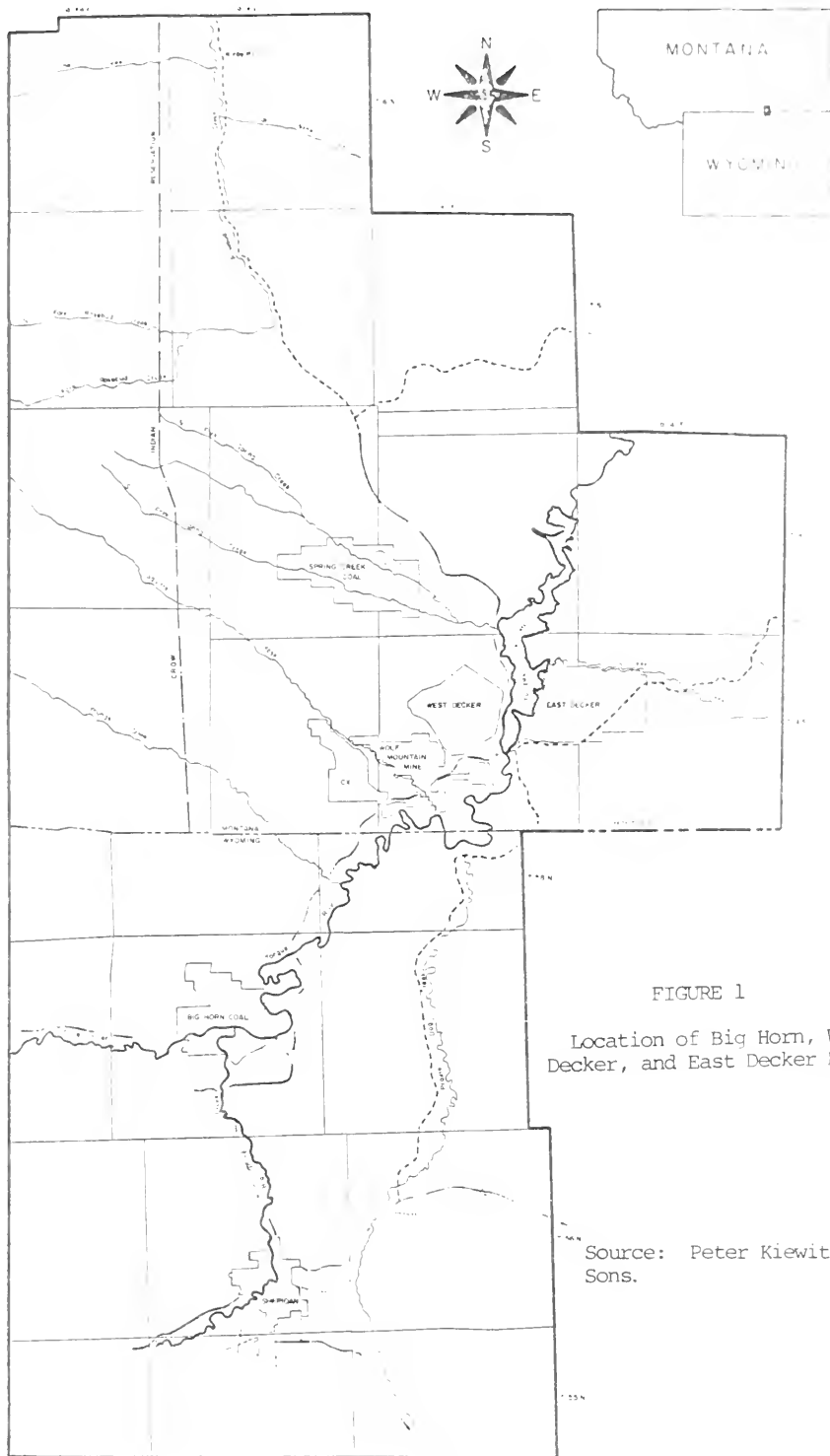
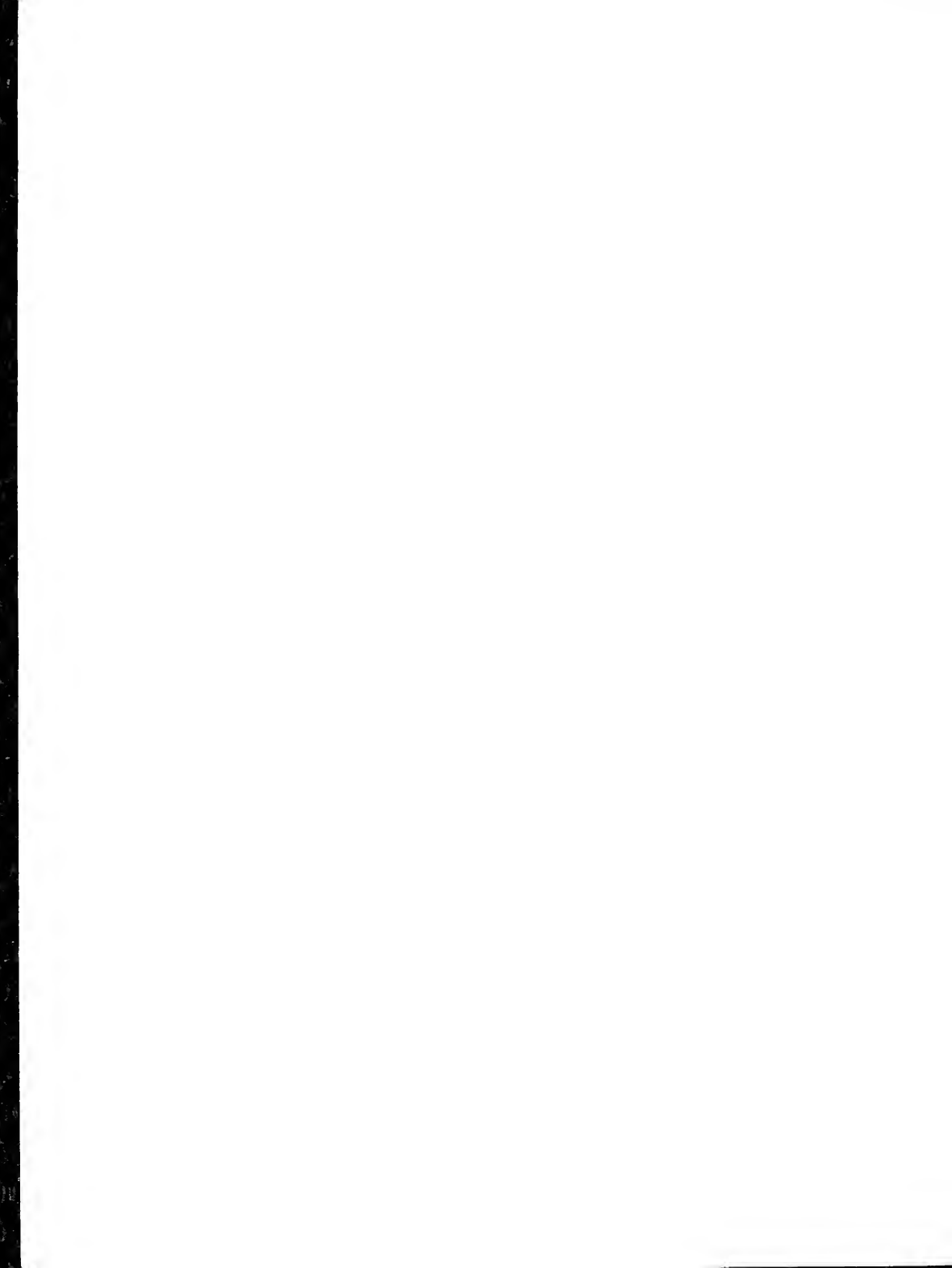


FIGURE 1

Location of Big Horn, West Decker, and East Decker Mines

Source: Peter Kiewit & Sons.

about the recreational activities of the workers and their families. Chapter 7 compares the results of the 1982 survey with those of a survey conducted in the Decker mines in 1977. Chapter 8 summarizes the conclusions reached from the survey, and Chapter 9 describes the methodology utilized to obtain and analyze the results.



## 2. PERSONAL AND OCCUPATIONAL CHARACTERISTICS OF WORKERS

This section summarizes the survey information on the personal and occupational characteristics of workers at both the Big Horn and Decker mines and the Sheridan Administrative Office. Percentages are given in each situation for total workers and also for four subgroups: Big Horn miners, Big Horn support personnel, Decker miners, Decker support personnel, and Sheridan support staff personnel. In this way, differences in location as well as between major occupational categories can be identified and examined.<sup>1</sup>

The characteristics presented in this chapter include: age, education, tribal membership, present job classification, place of residence, and length of residence of workers at both Big Horn and Decker mines.

---

<sup>1</sup>The occupational categories of miners include: laborer, mechanic/operative, and supervisor. The occupational categories of support personnel include: service, clerical, technical, professional, and administrative. Sheridan support staff include each occupational category with the exception of service.

TABLE 1  
Age of workers  
Big Horn and Decker Mines  
(percent)

Age	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Under 25	3.5	0.8	6.0	0.7	8.9	9.0
25 - 29	21.0	22.3	26.0	14.5	28.9	29.9
30 - 34	31.5	27.7	28.0	32.6	33.3	32.8
35 - 39	14.1	13.1	10.0	15.2	13.3	14.9
40 - 44	10.6	10.8	2.0	15.2	4.4	7.5
45 - 49	6.4	9.2	10.0	7.2	2.2	3.0
50 - 54	5.6	6.9	10.0	5.1	6.7	0.0
55 - 59	4.5	4.6	6.0	5.8	2.2	1.5
60 & over	2.8	4.6	2.0	3.6	0.0	1.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(750)	(130)	(50)	(321)	(137)	(67)
NONRESPONSES						
(Number)	8	7	1	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

As seen in Table 1, the majority of workers were between the ages of 25 and 39, with 30 to 34-year-olds accounting for nearly one-third across all categories of workers. The support personnel show a consistently higher proportion of younger workers (25-29) and a lower proportion of 40-44 year old workers than do the miner groups. Relatively few of the workers were over 50, with the Sheridan location showing a particularly low proportion of older workers.

TABLE 2  
Educational Level of Workers  
Big Horn and Decker Mines  
(percent)

Educational Level	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Less than High School Graduate	6.9	10.6	0.0	10.1	0.0	3.0
High School Graduate or GED	31.8	43.9	19.6	44.2	6.8	7.5
Some College, Vocational School	39.3	40.2	35.3	39.9	43.2	29.9
College Graduate or more	22.1	5.3	45.1	5.8	50.0	59.7
TOTAL Number	100.0 (705)	100.0 (132)	100.0 (51)	100.0 (321)	100.0 (134)	100.0 (67)
NONRESPONSES (number)	8	5	0	0	3	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

In congruence with the occupational characteristics, support staff showed a dramatically higher level of educational achievement than did the miner groups. For miners, a somewhat even split between high school graduate and "some college" was found. For support personnel, nearly half were college graduates, with another third reporting "some college." There were no apparent differences in educational attainment between the miners at the Big Horn and the Decker mines, but the Sheridan support personnel showed even higher educational levels than did the support personnel at the two mine sites.

TABLE 3  
Job Classification of Workers  
Big Horn and Decker Mines  
(percent)

Job Classification	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Laborer	6.9	5.8	0.0	11.6	0.0	6.1
Service	1.0	0.0	7.8	0.0	2.2	0.0
Mechanic/ Operative	49.7	81.0	0.0	73.9	0.0	9.1
Clerical	4.1	0.0	21.6	0.0	8.9	9.1
Supervisor	9.3	13.1	0.0	14.5	00	3.0
Technical	7.5	0.0	13.7	0.0	26.7	15.2
Professional	16.9	0.0	31.4	0.0	51.1	51.5
Administrative	4.5	0.0	25.5	0.0	11.1	6.1
TOTAL Number	100.0 (712)	100.0 (137)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (66)
NONRESPONSES (number)	1	0	0	0	0	1

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Over half of all workers were classified as holding mechanic/operative or labor positions, with nearly 25 percent in jobs classified as professional and technical. Less than 5 percent were in administrative positions. The remaining 15 percent of the workers were divided between service, clerical, and supervisory positions.

The only occupational differences observed between the mines were a slightly higher professional and technical level at Decker and a higher administrative level at Big Horn. The Sheridan support staff was high in professional and low in technical and administrative categories compared to other support groups. Other differences are self-explanatory.



TABLE 4

Male/Female Distribution of Workers  
Big Horn and Decker Mines  
(percent)

Sex of workers	Total All workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sneridan Support Staff
Male	91.0	98.5	82.4	93.5	84.4	83.6
Female	9.0	1.5	17.6	6.5	15.6	16.4
TOTAL Number	100.0 (711)	100.0 (135)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES (number)	2	2	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

Discussion:

Across all workers, the male/female workers ratio averaged 91:9. The higher ratio among the mining work force than support personnel is attributed to the greater number of women in clerical, technical, and professional positions. As seen in Table 4, relatively few miners were women.

TABLE 5  
Tribal Membership of Workers  
Big Horn and Decker Mines  
(percent)

Tribe	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Crow Tribe	0.9	3.2	0.0	0.7	0.0	0.0
Northern Cheyenne Tribe	0.3	0.0	0.0	0.7	0.0	0.0
Neither	98.8	96.8	100.0	98.6	100.0	100.0
TOTAL Number	100.0 (698)	100.0 (124)	100.0 (50)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES (number)	15	13	1	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 5 shows that only eight of the workers at the Big Horn and Decker mines were members of either the Crow or Northern Cheyenne tribes. Four Crow were working at Big Horn, while two Northern Cheyenne and two Crow were working at the Decker mines. The tribal members were miners rather than support personnel.

TABLE 6

Place of Residence of workers  
Big Horn and Decker Mines  
(percent)

Residence	Total All workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Sheridan, Big Horn, Becton, Wyarno	82.6	68.6	88.2	81.9	91.1	92.5
Dayton, Ran- cnester, Park- man, Acme	12.2	21.9	11.8	13.7	2.2	6.0
Banner, Story	3.4	3.6	0.0	3.6	4.4	1.5
Ucross, Clearmont	0.0	0.0	0.0	0.0	0.0	0.0
Buffalo	0.6	1.5	0.0	0.7	0.0	0.0
Other Wyoming	0.4	2.2	0.0	0.0	0.0	0.0
Decker	0.0	0.0	0.0	0.0	0.0	0.0
Lodge Grass, Garryowen, Crow Agency, Wyola	0.1	0.7	0.0	0.0	0.0	0.0
Other Montana	0.7	1.5	0.0	0.0	2.2	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(713)	(137)	(51)	(321)	(137)	(67)
<hr/>						
NONRESPONSES (number)	0	0	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 6 shows two predominant trends. First, the great majority of all workers lived in the greater Sheridan area (including the city). Second, of all groups, Big Horn miners showed the greatest residential dispersion with only 69 percent living in the immediate Sheridan area, compared to at least 80 percent in the other groups. Big Horn miners also resided in more areas than do the other groups.

#### Discussion (Cont.)

Support personnel were more highly clustered in the immediate Sheridan area than were the miners (88, 91, and 93 percent compared to 59 and 81 percent), with Big Horn support personnel having the lowest concentration of the support groups in this clustering. This difference may indicate a preference for city residence among higher occupation/education levels, but may also reflect a tendency to hire professionals and administrators from outside the mining area. For those moving to the area, the availability of housing is greatest in Sheridan.

TABLE 7  
Worker's Length of Residence in Area  
Big Horn and Decker Mines  
(percent)

Duration of Residence (years)	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Less than 5	16.3	8.8	27.5	5.6	33.3	38.8
5 - 9	24.0	19.9	15.7	23.2	31.1	26.4
10 - 14	9.3	11.0	7.8	10.9	4.4	9.0
15 - 19	2.5	1.5	3.9	3.6	0.0	3.0
20 and over	47.9	58.8	45.1	56.5	31.1	20.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(712)	(136)	(51)	(321)	(137)	(67)
<hr/>						
NONRESPONSES (number)	1	1	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

As Table 7 shows, there was little difference between the two mines with regard to how long workers had lived in the area. There were, however, large differences between miners and support personnel.

While all five groups had a substantial representation of old-timers (those in the community over 20 years) the support personnel had dramatically more newcomers than did the miners (28, 33, 37 percent vs. 9 and 6 percent for miners). As with place of residence (Table 6), this suggests that more people in higher occupations were drawn from outside the Sheridan area. It suggests, also, that there may be more rapid turnover among these groups than among miners, thus accounting for their newness to the area.

The period of 5-9 years of residence was well represented among all groups, but the proportion of workers residing in the area 10-14 years and 15-19 years was considerably lower, reflecting the decline of mining in the area during the 1950s and 1960s. Residence of 20 years and over was also quite common (from one-third to over one-half of

Discussion (cont.):

all totals) probably as a consequence of the area's mining history and the hiring of indigenous residents into the expanding work force. These data suggest that approximately 40 percent of all workers were drawn from outside the Sheridan area. Whether they came with jobs or found jobs after moving to the area cannot be ascertained from the data.

### 3. FAMILY AND HOUSING CHARACTERISTICS

This chapter presents information on family and housing characteristics of workers at both the Big Horn and Decker mines. Again, percentages are given for total workers and for five subgroups of workers.

The family characteristics discussed in this chapter include: marital status, household composition, number of children, and spouses' occupation. Housing data include: household size, number of employed persons in the household, housing type, and housing preference where workers are not living in their preferred housing choice.

TABLE 8  
Marital Status of Workers  
Big Horn and Decker Mines  
(percent)

Marital Status	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Single	9.4	8.1	19.6	4.3	15.6	16.4
Married	82.2	82.4	68.6	88.4	75.6	77.6
Divorced/ Separated	8.2	9.6	11.8	7.2	8.9	6.0
Widowed	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Number	100.0 (712)	100.0 (136)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES (number)	1	1	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### discussion:

Table 8 shows the high proportion of married compared to unmarried workers at the Big Horn and Decker mines. Relatively few of the workers were divorced or separated (an average of 8.2 percent of all workers). No current widowers were found.

Differences arose between miners and support personnel, with a substantially higher proportion of single workers among the three support groups. This correlates with the high number of young people new to the Sheridan area and, as will be seen later, new to the labor force. This group surfaces several times in the analysis.



TABLE 9  
Household Composition of workers  
Big Horn and Decker Mines  
(percent)

Household Composition	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Family/Couple	83.8	82.5	72.5	89.9	80.0	73.1
Extended Family	3.4	3.2	2.0	4.3	2.2	3.0
Family/Couple plus Unrelated Adults	0.8	0.8	0.0	1.4	0.0	0.0
Single Person/Unrelated Adults	10.6	12.7	25.5	2.9	15.6	22.4
Related Singles	1.4	0.8	0.0	1.4	2.2	1.5
TOTAL Number	100.0 (702)	100.0 (126)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES (number)	11	11	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 9 presents the household composition of workers. As with marital status, a large majority of workers (84 percent overall) were living in a nuclear family setting. Of the remaining individuals, nearly 75 percent of support personnel were living as singles or unrelated adults, again representing the younger workers discussed previously. Decker, however, had a lower proportion of singles and a higher proportion of marrieds than the other support groups, suggesting less influx of the younger workers.

A small number of all workers were living in an extended family situation, with very few falling into the remaining two categories (family plus unrelated adults, related singles). It thus appears that workers in these areas were still residing generally in traditional family situations.

TABLE 10  
Number of Children 18 and under in Worker Households  
Big Horn and Decker Mines  
(percent)

Number of Children	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
None	36.9	38.3	51.0	28.3	44.4	50.0
One	20.3	21.1	18.4	23.2	17.8	10.6
Two	28.0	28.1	22.4	29.7	24.4	30.3
Three	10.8	6.3	8.2	15.9	6.7	6.1
Four	3.4	6.3	0.0	1.4	6.7	3.0
Five	0.7	0.0	0.0	1.4	0.0	0.0
TOTAL Number	100.0 (701)	100.0 (128)	100.0 (49)	100.0 (321)	100.0 (137)	100.0 (66)
NONRESPONSES (number)	12	9	2	0	0	1

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

As can be seen from Table 10, few patterns emerged concerning the number of children per worker household, with the exception of the usual differences between miners and support personnel. As expected, a higher proportion of the support staff were in households with no children (reflecting the high incidence of single workers), while the miners were more likely to reside in households with three or more children. This appears to be a function more of age and family status than any real differences in mine location or employment status.

TABLE 11  
Household Size of Workers  
Big Horn and Decker Mines

Number per Household	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
One	8.8	10.9	20.0	2.2	13.3	19.4
Two	27.0	25.0	24.0	26.6	28.9	29.9
Three	20.8	22.7	28.0	22.5	17.8	10.4
Four	27.2	26.6	20.0	29.0	24.4	29.9
Five	11.8	8.6	8.0	15.9	8.9	7.5
Six	3.0	5.5	0.0	2.2	4.4	1.5
Seven	1.3	0.0	0.0	1.4	2.2	1.5
Eight	0.0	0.0	0.0	0.0	0.0	0.0
Nine	0.1	0.8	0.0	0.0	0.0	0.0
TOTAL Number	100.0 (703)	100.0 (128)	100.0 (50)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES	10	9	1	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedures; see discussion in Chapter 9.

Discussion:

Table 11 shows the total number of people, male and female, residing in the workers' households. The trends here are nearly identical to those regarding the number of children (see Table 10) and have similar implications.

TABLE 12

Number of Full-time Employed Persons per Household  
Big Horn and Decker Mines

Number of Persons Employed Full-time	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
One	57.7	57.0	40.8	63.8	51.1	56.1
Two	39.6	38.0	57.1	34.8	44.4	42.4
Three	1.9	2.7	2.0	1.4	2.2	1.5
Four	.6	0.8	0.0	0.0	2.2	0.0
Five	0.1	0.8	0.0	0.0	0.0	0.0
Six	0.0	0.0	0.0	0.0	0.0	0.0
Seven	0.1	0.8	0.0	0.0	0.0	0.0
TOTAL Number	100.0 (695)	100.0 (121)	100.0 (49)	100.0 (321)	100.0 (137)	100.0 (66)
NONRESPONSES (number)	18	15	2	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 12 shows the distribution of workers according to the number of persons in the household that were employed full-time. The higher rates of one-person employment among miners agree with the rates of spouses' employment (see Table 13). The higher rates of two-worker households among Big Horn support personnel are surprising, especially when the high proportion of single workers (and one-person households) at this site is considered. The greater numbers of single workers reduced the difference between oneand two-worker households in Decker and Sheridan support groups.

TABLE 13

Occupation of Spouses of workers  
Big Horn and Decker Mines  
(percent)

Spouses' Occupation	Total All workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Professional, Self-employed	0.0	0.0	0.0	0.0	0.0	0.0
Professional, Salaried	10.0	6.5	21.7	5.8	17.6	12.5
Manager	2.5	0.0	2.2	1.4	6.7	3.1
Technical	3.0	2.4	2.2	2.2	6.7	1.6
Sales, Other	0.6	0.8	0.0	0.7	0.0	1.6
Proprietor	0.3	0.0	0.0	0.7	0.0	0.0
Clerical	11.4	9.8	13.0	10.9	11.1	17.2
Sales, Retail	2.3	1.6	4.3	3.6	0.0	0.0
Craftsman, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Craftsman, Other	1.2	0.0	4.3	1.4	0.0	1.6
Craftsman, Construction	0.3	0.8	2.2	0.0	0.0	0.0
Operative, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Operative, Other	0.6	0.0	0.0	0.7	0.0	3.1
Transportation Equipment Operator	0.1	0.0	0.0	0.0	0.0	1.6
Service	5.8	13.0	4.3	5.1	2.2	4.7
Laborer, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Laborer, Other	2.5	0.8	0.0	5.1	0.0	0.0
Farmer, Rancher	0.1	0.8	0.0	0.0	0.0	0.0
Farm Laborer	0.3	1.6	0.0	0.0	0.0	0.0
Student	0.7	0.8	0.0	0.7	0.0	3.1

TABLE 13 cont.

Occupation of Spouse of Worker  
Big Horn and Decker Mines  
(percent)

Spouses' Occupation	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
unemployed (including housewives)	41.5	43.1	17.4	50.7	33.3	4.7
no spouse	16.5	17.9	28.3	10.9	22.2	11.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(691)	(123)	(46)	(321)	(137)	(64)
NONRESPONSES						
number	26	14	5	0	0	5

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 13 presents the occupations of workers' spouses. It should be noted here that the sex ratio of all workers was 947 male to 64 female; thus, 90 percent of these data pertain to women.

Three major differences were observed. First, support staff were more likely than miners to be without spouses -- substantiating the previous information on marital status.

Second, the incidence of unemployed spouses was much higher in the miner groups than in the support groups (partially due to high "no spouse" figures in support groups). This again shows a support of traditional values among all workers and particularly among the miner groups. Overall, nearly half (49.7 percent) of those with spouses reported that the spouse was not employed outside the home. Of the miners with a spouse, these figures were 52.5 percent (Big Horn) and 56.9 percent (Decker). Of the support personnel with a spouse, 24.3 percent (Big Horn), 42.8 percent (Decker) and 36.0 percent (Sheridan) reported that their spouse was not employed.

Third, there was a slightly greater tendency for the spouses of the support groups workers to be in the professional, technical, and retail sales than for spouses of the miner groups. Similarly, miners' spouses were more frequently employed in service and ranching than were the spouses of support personnel. This was expected, since workers with higher education tend to have spouses with higher education and thus higher status jobs.

TABLE 14  
Housing Type of Workers  
Big Horn and Decker Mines  
(percent)

Housing Type	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Single-family Home						
Own	67.7	57.8	62.0	73.9	64.4	67.2
Rent	10.2	11.1	16.0	10.1	6.7	13.4
Mobile Home						
Own	12.7	20.7	10.0	13.0	8.9	6.0
Rent	0.4	0.7	0.0	0.7	0.0	0.0
Apartment						
Own	1.1	1.5	0.0	0.7	2.2	1.5
Rent	4.7	5.2	10.0	0.7	11.1	7.5
Townhouse/Condominium						
Own	1.4	0.0	0.0	0.7	4.4	3.0
Rent	0.8	1.5	0.0	0.0	2.2	1.5
Motel						
Own	0.1	0.0	2.0	0.0	0.0	0.0
Rent	0.1	0.7	0.0	0.0	0.0	0.0
RV/Camper (own)	0.1	0.7	0.0	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(706)	(135)	(50)	(321)	(137)	(67)
NONRESPONSES (number)	7	2	1	0	0	3

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Tables 14 and 15 show the type of housing in which workers were living at the time of the survey and the housing preference of workers who did not prefer their present housing type. As Table 14 shows, the majority (77.9 percent) of all workers were living in single-family homes at the time of the survey; 67.7 percent of all workers were

TABLE 15

Housing Type & Preference  
of Workers Who Do Not Prefer Current  
Housing (Total All Workers  
Big Horn and Becker Mines  
(percent)

Preferred Housing	Single- Family Home	Current Housing		Townhouse/ Condo- minium	Motel	RV- Campers
		Mobile Home	Apart- ment			
Single-family Home	100.0	98.1	84.4	100.0	100.0	100.0
Mobile Home	0.0	0.0	15.6	0.0	0.0	0.0
Other	0.0	1.9	0.0	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(1)	(53)	(19)	(10)	(1)	(1)
Total Number Currently in Housing Type <sup>a</sup>	(550)	(92)	(41)	(16)	(1)	(1)
NONRESPONSES = 17 number						

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>From Table 14.

#### Discussion (cont.):

owners of a single-family home, with an additional 10.2 percent renting this type of housing. With the additional 13.1 percent of all workers who were living in mobile homes, a total of 91.0 percent of the workers were living in single-family units at the time of the survey. About 83 percent of the workers owned their own housing. Very few (0.3 percent) were living in "transient" housing -- motels or RV/campers -- at the time of the survey, probably reflecting the long-term, operations phase of mine employment.

Although no consistent pattern for residence in single-family homes emerged between miners and support staff, miners were somewhat more likely than support staff to live in mobile homes. In addition, workers at the Big Horn Mine were more likely to be renting their housing, less likely to own their own home, and more likely to live in mobile homes than were other workers.



Discussion (cont.):

As Table 15 shows, 53 of the 92 mobile home dwellers indicated a preference for another type of housing with 96.1 percent of those dissatisfied with mobile home living preferring a single-family home. Nearly half of those who were living in apartments indicated a preference for other housing, with 84.4 percent of those dissatisfied with apartments preferring a single-family home and 15.6 percent preferring a mobile home. Two-thirds of the townhouse/condominium dwellers indicated a preference for single-family homes, as did both of the motel and RV/camper dwellers.



#### 4. RESIDENTIAL AND OCCUPATIONAL MOBILITY

Chapter 4 presents information on several areas of concern: residential and occupational mobility, prior mine work, and worker transportation characteristics. The data are presented primarily in the same format as previous sections, with some crosstabulations for clarification.

Residential mobility was determined by examining the prior residence of workers and crosstabulating prior residence with current residence. Occupational mobility was examined by prior occupational categories and crosstabulating prior occupation with current occupation. In addition, data on the location of prior employment and on the number of workers who had been employed at other mines in the area are presented.

The transportation characteristics presented include method of transportation and number of people in carpools.

TABLE 16

Prior Occupation of Workers  
Big Horn and Decker Mines  
(percent)

Occupation	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Professional, Self-employed	0.0	0.0	0.0	0.0	0.0	0.0
Professional, Salaried	8.9	3.1	20.8	4.4	8.9	34.4
Manager	5.4	3.8	22.9	2.9	8.9	0.0
Technical	3.4	0.0	3.3	0.7	6.7	10.5
Sales, Other	1.2	0.8	2.1	0.7	2.2	1.6
Proprietor	0.8	0.0	0.0	0.7	2.2	0.0
Clerical	3.6	0.0	6.3	2.9	6.7	6.3
Sales, Retail	0.9	0.8	6.3	0.7	0.0	0.0
Craftsman, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Craftsman, Other	22.1	26.7	4.2	28.5	17.8	3.1
Craftsman, Construction	3.6	1.5	0.0	6.6	0.0	3.1
Operative, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Operative, Other	20.1	29.8	0.0	29.2	2.2	7.8
Transportation Equipment Operator	4.6	6.9	0.0	7.3	0.0	1.6
Service	2.2	3.1	4.2	1.5	2.2	3.1

TABLE 16 (cont.)  
Prior Occupation of workers  
Big Horn and Decker Mines  
(percent)

Occupation	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Labor, Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0
Labor, Other	6.6	6.1	0.0	9.5	4.4	3.1
Farmer, Rancher	3.4	9.2	4.2	2.2	2.2	0.0
Farm Laborer	1.2	3.8	2.1	0.7	0.0	0.0
Student	11.9	4.6	18.8	1.5	35.6	23.4
TOTAL Number	100.0 (699)	100.0 (131)	100.0 (48)	100.0 (319)	100.0 (137)	100.0 (64)
NONRESPONSES (number)	14	6	3	2	0	3

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Tables 16 and 17 provide information on prior occupation and occupational mobility among Decker and Big Horn mine workers. Several patterns can be seen.

There is a remarkable difference between prior occupations of Big Horn and Decker support personnel. While 45 percent of the Big Horn group were previously professionals or technicians (showing prior experience in their current jobs), only 17 percent at Decker were employed in such occupations. As was seen in Table 3, the occupational breakdown of both support groups is similar, with Decker actually higher in proportion of the upper occupational categories (technical, professional, and administrative). Thus, it seems unusual to have such variance in prior job experience.

There appear to be two reasons for this variance. First, the proportion of workers whose prior occupation was "student" was twice as high at Decker as at Big Horn, showing again the new people entering the labor market as professionals and technicians at the Decker Mine. This is probably a reflection of the Decker Mine's more recent opening. Second, a large number of workers who had previously been craftsmen were employed as Decker support personnel, indicating perhaps a corporate policy for personnel upgrading or transfer.

TABLE 17  
Current Occupational Category by Prior Occupation  
(All workers)  
Big Horn and Decker Mines  
(percent)

Prior Occupation	Current Occupation							
	Laborer	Service	Mech./Op.	Clerical	Super.	Tech.	Prof.	Adm.
Professional, Managerial	9.4	0.0	3.6	17.7	25.8	7.7	35.5	35.2
Technical	0.0	0.0	0.7	0.0	0.0	28.7	5.1	0.0
Proprietor	0.0	0.0	0.0	10.8	3.6	0.0	0.0	0.0
Clerical	4.7	0.0	1.4	46.5	3.6	5.7	0.0	0.0
Sales	4.7	43.2	0.7	10.6	5.0	3.8	0.0	0.0
Service	6.5	14.2	1.3	10.8	1.5	1.9	1.7	0.0
Craftsman <sup>a</sup>	23.0	14.2	35.3	0.0	29.4	34.8	2.6	13.0
Trans. Equip. Operator	4.7	0.0	7.8	0.0	5.2	1.9	0.0	0.0
Operative, Other	15.5	0.0	32.5	0.0	26.3	0.0	0.8	9.9
Laborer, Non-farm	22.3	0.0	8.6	0.0	0.0	5.8	2.6	0.0
Farmer, Rancher	0.0	28.4	5.6	0.0	0.0	0.0	2.6	0.0
Farm Laborer	2.0	0.0	1.9	0.0	0.0	0.0	0.8	0.0
Student	6.8	0.0	1.9	3.5	1.5	9.6	48.4	29.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	(49)	(7)	(346)	(28)	(65)	(53)	(119)	(31)

<sup>b</sup>NONRESPONSES = 15

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Craftsman, such as mechanics and electricians are grouped into mech/op for current occupation.

<sup>b</sup>Includes people who were previously unemployed.

#### Discussion (cont.):

Other patterns are as expected. Both groups of miners primarily held prior positions as operatives or craftsmen (68 percent of these did not change job categories). The Sheridan support staff had a strong background in professional and technical positions (as well as many new workers -- 23 percent of the total). These results are compatible overall with the current occupational categories of these groups.

Crosstabulations on these data (Table 17) generally support these patterns. Some interesting points should be noted, however. In terms of general job categories, 60 to 60 percent of workers were not mobile -- they did not change occupations. Upward mobility was evident among supervisors who generally came from the rank-and-file operatives and craftsmen. Some movement was also found among managers, professionals, and administrators (some of which is due to differences in coding procedures).

A surprising number of workers experienced downward mobility in terms of traditional job "status." Forty-three percent of laborers reported that they had previously worked as craftsmen or operators, with only 22 percent previously employed as laborers. Twenty-one percent of clerical workers previously worked as professionals, managers, and technicians (14 percent as professionals alone). These data indicate an interesting, but unpatterned, type of job mobility. It is not known how earnings were affected by these occupational changes.

Finally, it should be noted that 46 percent of professionals at all sites were students prior to working at the mines. Eighty-seven percent of administrative, professional, and technical positions combined were students. This reflects the large number of new, young, mostly single, workers that continue to affect the data on many variables.

TABLE 1  
Location of Prior Employment of Workers  
Big Horn and Decker Mines  
(percent)

Location of Prior Employment	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Big Horn County	5.1	7.5	3.9	2.9	8.9	4.5
Billings/Laurel	1.2	2.2	2.0	1.4	0.0	0.0
Other Montana County	6.7	3.0	0.0	7.2	13.3	3.0
Sheridan County	46.5	55.2	49.0	55.1	26.7	76.9
Other Wyoming County	14.8	15.7	15.7	15.2	8.9	12.4
Other State	22.4	14.9	19.6	18.1	35.6	32.6
Not employed	3.3	1.5	9.8	0.0	6.7	10.4
TOTAL Number	100.0 (710)	100.0 (134)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (67)
NONRESPONSES Number	3	3	0	0	0	0

Source: Mountain West Research-North, Inc., 1962.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

The information on location of prior employment found in Table 18 shows that most individuals worked in a Wyoming county prior to working at Big Horn and Decker mines. In addition, nearly half worked in Sheridan County. A few individuals worked either in Big Horn County or Montana, with Decker support personnel being somewhat higher in these categories. There are, however, some differences between categories of workers.



Discussion (cont.):

All Big Horn workers plus Decker miners worked primarily in Sheridan County and other Wyoming counties. Decker and Sheridan support personnel, however, had a lower proportion from these counties and a higher percentage from outside of Montana or Wyoming. One-third of these two groups previously worked outside of these two states. This, again, is accounted for primarily by the large number of new workers graduating from school and entering the labor force among these groups. While Big Horn support data were not affected as much by this variation, it remained "in between" the miners and other support groups on this variable.

TABLE 14

Residence of Workers Prior to Employment  
Big Horn and Decker Mines  
(percent)

Place of Residence Prior to Employment	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Sheridan, Big Horn, Becton, Wyarno	43.4	50.0	33.3	50.2	26.7	30.2
Dayton, Ran- chester, Park- man, Acme	4.9	13.4	7.8	3.7	3.0	7.5
Banner, Story	2.1	2.2	0.0	1.8	2.2	0.0
Ucross, Clearmont	0.5	0.0	2.0	0.7	0.0	0.0
Buffalo	1.1	2.2	0.0	1.4	0.0	0.0
Other Wyoming	14.8	11.2	23.5	13.0	15.6	22.7
Decker	0.3	1.5	0.0	0.0	0.0	0.0
Wyola, Lodge Grass, Garry- win, Crow Agency	0.3	1.5	0.0	0.0	0.0	0.0
Other Montana	7.8	4.5	7.8	6.5	15.6	4.5
Surrounding States <sup>a</sup>	14.1	6.0	19.6	10.6	24.1	22.7
Other States	10.5	7.5	5.9	9.7	15.6	18.2
TOTAL Number	100.0 (709)	100.0 (134)	100.0 (51)	100.0 (321)	100.0 (137)	100.0 (56)
NONRESPONSES (number)	4	3	0	0	0	1

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes: South Dakota, North Dakota, Nebraska, Colorado, Utah, Idaho, Iowa, Kansas, and Minnesota.

TABLE 20

Current Place of Residence by Place of Residence Prior to Employment  
(All Workers)  
Big Horn and Decker Mines  
(percent)

Prior Residence	Current Residence								
	Sheridan	Dayton	Banner	Ucross	Buffalo	Other Wyoming	Decker	Lodgegrass	Other Montana
Sheridan, Big Horn, Becton, WYarno	49.0	18.9	14.0	0.0	0.0	0.0	0.0	100.0	0.0
Dayton, Ran- chester, Park- man, Acme	0.9	34.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Banner, Story	0.8	2.7	35.3	0.0	0.0	0.0	0.0	0.0	0.0
Ucross, Clearmont	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buffalo	1.0	0.0	0.0	0.0	46.2	0.0	0.0	0.0	0.0
Other Wyoming	13.7	21.3	9.8	0.0	53.8	66.7	0.0	0.0	0.0
Decker	0.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lodge- grass, Garry- owen, Crow Agency, WYola	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Montana	8.1	6.6	4.2	0.0	0.0	0.0	0.0	0.0	24.7
Surround- ing States	14.6	8.1	36.7	0.0	0.0	0.0	0.0	0.0	0.0
Other states	11.2	5.0	0.0	0.0	0.0	3.3	0.0	0.0	75.3
TOTAL Number	100.0 (587)	100.0 (86)	100.0 (24)	0.0 (0)	100.0 (4)	100.0 (3)	0.0 (0)	100.0 (1)	100.0 (4)

NUNRESPONSES = 4

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

## Discussion

Tables 19 and 20 present data on the residential distribution of workers prior to their employment at the Big Horn and Becker mines. As shown in Tables 18 and 19, the prior residence patterns are very similar to the locations of prior employment. Most workers lived in Wyoming counties prior to their employment at their current jobs, with the largest number living right in the Sheridan area. The same trends mentioned in Table 18 are evident here, also.

Crosstabulation of current and prior residence shows relatively little geographic mobility. Looking down the diagonal on Table 20, it can be seen that a high proportion of workers did not leave their area of residence to gain employment at the mines.

Perhaps the biggest group of mobile workers, again, are the new workers fresh from schools out-of-state. These individuals have settled primarily in Sheridan, with a sprinkling settling in the Dayton area, Banner, and other Montana towns. Looking just at Sheridan area residents (excluding Dayton) who work at the mines, 17 percent came from other Wyoming towns, 8 percent came from Montana, and 26 percent moved in from states other than Montana or Wyoming.

TABLE 21

Workers Previously Employed at Other Coal Mines in Area  
Big Horn and Decker Mines  
(percent)

Previous Employment at Other Mines	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Yes	14.8	17.6	23.5	14.6	4.4	24.2
No	85.2	82.4	76.5	85.4	95.6	75.8
TOTAL Number	100.0 (709)	100.0 (136)	100.0 (51)	100.0 (319)	100.0 (137)	100.0 (66)
NONRESPONSES (number)	4	1	0	2	0	1

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

The majority of workers in all categories had not worked at other coal mines in the area (85 percent versus 15 percent who have done so). However, there were some interesting variations within groups. Both the Big Horn and Decker miner groups showed about the same proportion of workers with previous employment at other mines: the Big Horn and Sheridan support groups showed equal but somewhat higher numbers of workers, who had such previous experience. Decker support personnel reported by far the lowest proportion of previous employment at other area mines (4 percent). This corresponds with their higher previous residence outside the region.

TABLE 22  
Method of Transportation of workers  
Big Horn and Decker Mines  
(percent)

Transportation Methods	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Personal Vehicle	69.8	91.9	49.0	64.8	42.2	25.4
Commercial Bus	1.5	0.0	5.9	1.4	2.2	0.0
Company Vehicle	27.2	5.9	45.1	10.3	55.6	70.1
Other	1.5	2.2	0.0	1.4	0.0	4.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Number	(711)	(135)	(51)	(321)	(137)	(67)
NONRESPONSES						
(number)	2	2	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 22 shows that with minor exceptions, personal vehicles and company vehicles are the primary means of transportation to work at these mine sites. The differences between groups are reflections of the occupations which have company vehicles assigned -- support staff positions (professional and administrative as well as supervisors). There seem to be no other important differences between mine sites, or between miners and support personnel. The slightly higher proportion of Sheridan support staff utilizing "other" means of transport is probably due to the relative proximity of work and residential location for these workers.

TABLE 23  
Size of Carpools  
Big Horn and Decker Mines  
(percent)

Number in Carpools	Total All workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support Staff
Travel alone	25.8	63.7	46.0	11.8	11.1	30.3
Company or Com- mercial Trans- portation <sup>a</sup>	14.0	2.2	36.0	5.1	31.1	28.8
Two People	12.7	12.6	10.0	14.7	4.4	22.7
Three People	18.1	14.6	0.0	23.5	17.8	3.0
Four People	14.6	3.0	6.0	22.1	17.8	3.0
Five People	7.4	3.7	2.0	13.2	2.2	1.5
Six or More People	7.3	0.0	0.0	9.6	15.6	0.0
TOTAL Number	100.0 (704)	100.0 (135)	100.0 (50)	100.0 (316)	100.0 (137)	100.0 (66)
NONRESPONSES (number)	9	2	1	5		1

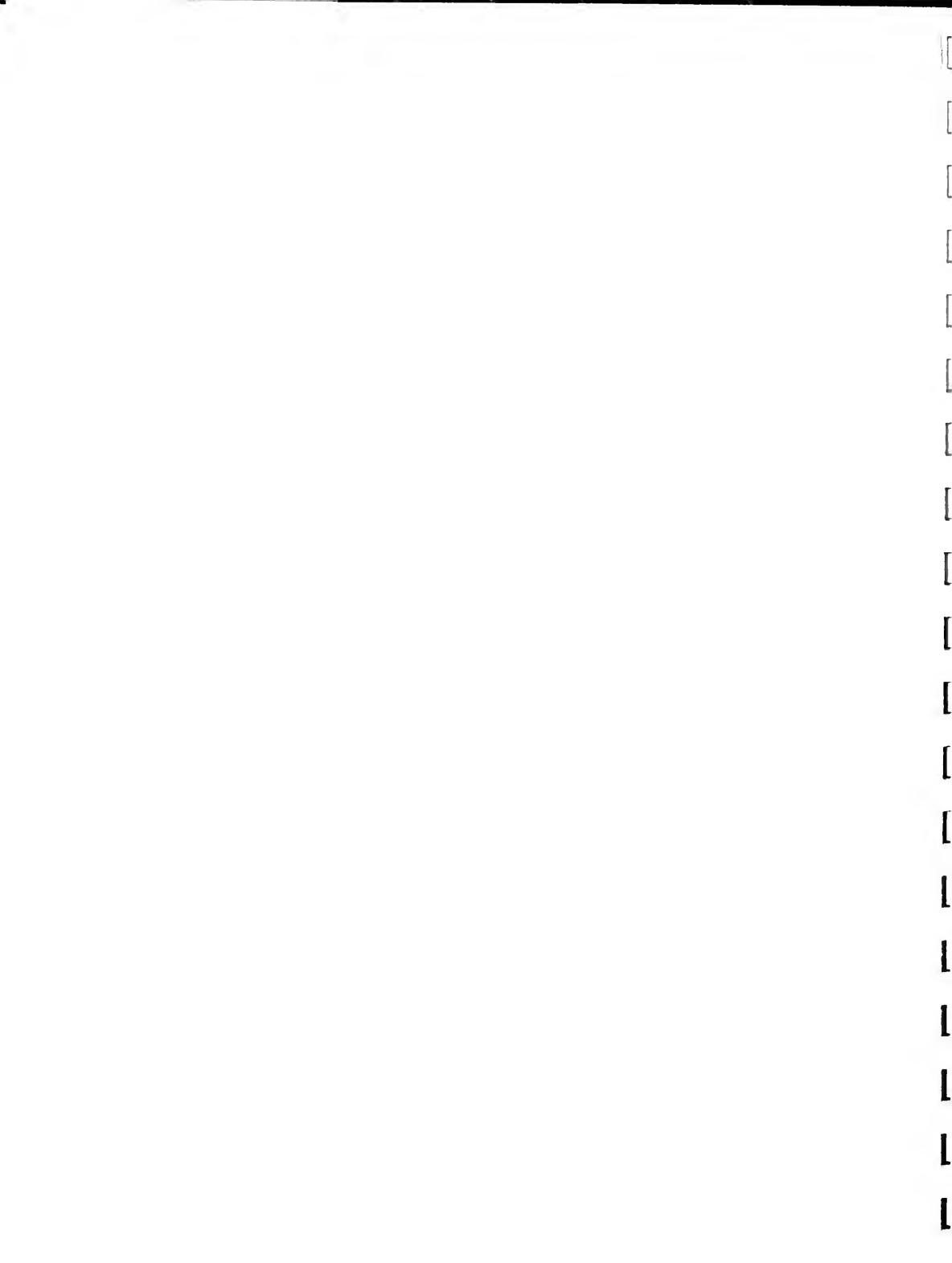
Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>The totals in this category don't match those of Table 22 above. There seems to have been some confusion, with some of those carpooling in company cars indicating the number of people rather than "company transportation."

#### Discussion:

Table 23 provides information on the characteristics of commuting patterns by workers at the three sites. Perhaps due to the greater distance to the work site, workers at the Decker mines were more likely than others to travel in carpools of two or more persons (63.1 percent miners and 57.8 percent support staff). Over 60 percent of all workers did carpool, a high figure especially considering that some who carpooled in company vehicles were not included since they marked only "company or commercial transportation."





## 5. CROSSTABULATIONS ON DEMOGRAPHIC VARIABLES

The characteristics of various subgroups of workers are often different from one another, thus causing them to place somewhat different demands upon their communities. Dimensions that commonly delineate these subgroups are: length of residence in the community or marital status. Single people make different demands upon community resources than do married people; other dimensions can easily show similar differences. In this section, crosstabulations are presented for selected demographic characteristics on three such dimensions: years lived in community, marital status, and spouses' employment status. By examining these groupings further, the relationships between mine-workers and their community can be more fully evaluated.

TABLE 24

Marital Status by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Marital Status	Length of Residence			Total all workers
	Less than 5 Years	5 - 14 Years	15 or More Years	
Single	21.9 <sup>a</sup> 3.5 <sup>b</sup>	4.7 1.5	8.6 4.4	57 9.4
Married	76.4 12.4	89.1 29.7	79.7 40.2	(565) 82.3
Divorced/Separated	1.7 0.3	6.2 2.1	11.6 5.9	(59) 5.3
TOTAL	100.0 16.2	100.0 33.3	100.0 50.5	(711) 100.0
Number	(115)	(237)	(359)	(711)

NONRESPONSES = 2

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Column percent

<sup>b</sup>Table percent

#### Discussion:

Table 24 shows the relationship between workers' marital status and their length of residence in the community. Included are total table percentages for added clarification.

Overall, about 40 percent of all workers were married and had lived in the area longer than 15 years. Fully 50 percent of all workers had lived in the area over 15 years, and 82 percent of all workers were married. This shows a high degree of stability along both dimensions.

More specifically, the characteristics of three groups of workers were compared: "newcomers" who had lived in their community less than five years, a middle group who had lived in their communities for 5-14 years, and "old-timers" of 15 years of residence or longer. The proportion of married workers in each of these three groups was

Discussion (cont.):

relatively constant, in each case accounting for over three-fourths of the total. The "less than 5 years" group showed by far the greatest proportion of single persons, with very few divorced/separated individuals. The middle group (5-14 years) showed the highest proportion in the married category, while the longtime residents (15 or more) were highest in proportion of divorced/separated and second highest of single among the three groups. Much of this pattern is probably a function of age and is congruent with employment and housing data evaluated earlier.

TABLE 25

Occupation by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Occupation	Length of Residence			Total all Workers
	Less than 5 Years	5 - 14 Years	15 or More Years	
Labor	0.0 <sup>a</sup> 0.0 <sup>b</sup>	3.2 1.1	11.6 5.9	(49) 6.9
Service	0.0 0.0	1.3 0.4	1.1 0.6	(7) 1.0
Mechanic and Operator	19.7 3.2	51.7 17.2	58.1 29.3	(353) 49.7
Clerical	3.4 0.5	0.8 0.3	6.5 3.2	(29) 4.1
Supervisor	8.3 1.4	11.7 3.9	8.2 4.1	(67) 9.4
Technical	14.7 2.4	7.7 2.5	5.1 2.5	(54) 7.5
Professional	49.4 6.0	15.0 4.9	7.6 3.8	(120) 16.9
Administrative	4.3 0.7	8.5 2.8	2.0 1.0	(32) 4.5
TOTAL	100.0 16.3	100.0 33.2	100.0 50.5	(711) 100.0
Number	(116)	(236)	(359)	(711)

NONRESPONSES = 2  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Column percent

<sup>b</sup>Table percent

TABLE 26

Education by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Educational Level	Length of Residence			Total All Workers
	Less than 5 Years	5 - 14 Years	15 or More Years	
Less than High School	0.0	8.5	8.0	6.9
High School Graduate or GED	13.3	29.9	39.0	31.8
Some College/Voca- tional School	33.4	37.8	42.1	39.3
College Graduate or More	53.3	23.8	10.8	22.1
TOTAL	100.0	100.0	100.0	100.0
Number	(115)	(234)	(356)	(705)

NONRESPONSES = 8  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

Discussion:

When comparing educational level of workers by their length of residence in the community, patterns similar to those for occupation and residence are seen. A higher percentage of "newcomers" had completed higher education (college graduate or more) than the average for all workers, while "old-timers" were more likely than average to have had somewhat lower levels (high school graduate and some college). The middle group was closer to the average at all levels above high school. Very few workers (6.9 percent of the total) had less than a high school education (no newcomers were in this category).

This is another reflection of the generally more highly-educated, higher status occupation workers, new to the labor market, who represent the newcomers drawn to the community by the mining activities.

TABLE 27

Place of Residence by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Place of Residence	Length of Residence		
	Less than 5 Years	5 - 14 Years	15 or More Years
Sheridan	88.2	82.0	77.6
Dayton	4.9	5.5	7.7
Ranchester	0.0	7.3	6.3
Bighorn	2.6	0.0	1.6
Banner	0.9	0.0	0.0
Story	2.0	3.4	3.3
Parkman	0.0	0.0	0.3
Buffalo	0.0	1.0	0.6
Wyola	0.0	0.0	0.3
Wyarno	0.0	0.4	0.6
Other Wyoming	0.9	0.0	0.6
Other Montana	0.0	0.4	1.1
TOTAL	100.0	100.0	100.0
Number	(116)	(237)	(359)

NONRESPONSES = 1  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 27 shows the distribution of old-timers and the two groups of newcomers in terms of place of residence. As expected from previous analyses, newcomers were more likely than others to have settled in Sheridan, though the differences were relatively slight. Old-timers lived in a larger number of places than did members of the other two groups. Since they represent the largest group (50.4 percent compared to 16.3 and 33.3 percent), this is not entirely surprising.

TABLE 28

Number of Children at Home by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Number of Children	Length of Residence			Total All workers
	Less than 5 Years	5 - 14 Years	15 or More Years	
None	52.1	24.6	39.8	36.9
One	11.3	23.7	20.9	20.3
Two	22.6	33.9	25.5	28.0
Three	9.6	12.7	10.0	10.8
Four	1.7	4.7	2.9	3.4
Five	1.7	0.0	0.5	0.7
TOTAL	100.0	100.0	100.0	100.0
Number	(116)	(237)	(359)	(701)

NONRESPONSES = 13  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

This table tabulates number of children by length of residence, and closely resembles Table 24, which showed marital status by length of residence.

Newcomers (less than 5 years) who were less likely to be married, had the largest percentage of households with no children (52.1 percent) and the fewest children (116). However, newcomers with children had the highest average number of children per household (2.09) of any group (middle-term residents with children averaged 1.96 children, long-term residents with children averaged 1.83 children).

The distribution of children among the middle group and the old-timers were similar, with the exception that a higher proportion of old-timers had no children (this showed up as more singles in the analysis of marital status).

It should be noted that the actual number of children in households, 18 years and under, for each category is estimated at: 116, 350, and 395.

TABLE 29

Type of Housing by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Type of Housing	Length of Residence		
	Less than 5 Years	5 - 14 Years	15 or More Years
Single-family Home	59.5	77.3	84.6
Mobile Home	15.3	14.3	11.9
Apartment	18.3	5.6	2.0
Townhouse/Condominium	7.0	1.7	1.2
Motel	0.0	0.4	0.3
RV/Camper	0.0	0.4	0.0
TOTAL	100.0	100.0	100.0
Number	(116)	(237)	(358)

NONRESPONSES = 2  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

The distribution of type of housing by length of worker's residence in community is shown in Table 29. Workers with greatest length of residence were most likely to live in a single-family home (84.6 percent) followed by those with medium-term residence (77.3 percent) and newcomers (59.5 percent). Newcomers were by far more likely than the other groups to live in apartments or townhouse/condominiums. Mobile home residence was surprisingly stable across all groups (15.3, 14.3 and 11.9 percent).



TABLE 30

Employment Status of Spouse by Length of Residence in Community  
(All workers)  
Big Horn and Decker Mines  
(percent)

Employment Status of Spouse	Length of Residence			Total All workers
	Less than 5 Years	5 - 14 Years	15 or More Years	
Employed	60.9	48.4	46.6	49.4
Student	1.1	0.5	1.1	0.9
Nonemployed	37.9	51.2	52.3	49.7
TOTAL	100.0	100.0	100.0	100.0
Number	(87)	(213)	(277)	(577)

NONRESPONSES = 136<sup>a</sup>  
(number)

Source: Mountain West Research-North, Inc., 1962.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes workers with no spouse.

#### Discussion:

Table 30 crosstabulates the employment status of spouse by length of worker residence in community. The only difference on this dimension appears to be between newcomers and the other two groups. The ratio of working to nonworking spouses among newcomers was much higher than for the other groups. Part of the explanation for this may be that more newcomers held higher status jobs and were better educated, which in turn, suggests that their spouses were higher educated and thus more involved in the labor market. Another factor may be the higher percentage of young workers among newcomers and the greater likelihood of young wives working. However, data to support this analysis are not available.

TABLE 31  
Occupation of Married and Unmarried Workers  
(All workers)  
Big Horn and Decker Mines  
(percent)

Occupation	Married	Unmarried	Total All workers
Labor	6.9	6.9	6.9
Service	1.0	0.8	1.0
Mechanical/Operative	52.6	36.0	49.7
Clerical	2.6	11.2	4.1
Supervisor	9.4	9.0	9.4
Technical	6.6	12.0	7.5
Professional	15.7	22.5	16.9
Administrative	5.2	1.6	4.5
TOTAL	100.0	100.0	100.0
Number	(585)	(126)	(711)

NONRESPONSES = 2  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 31 shows the occupation of workers by marital status. A higher percentage of married than unmarried workers were employed in mechanical/operative and administrative occupations while unmarried workers showed a higher than expected concentration in clerical, technical, and professional positions.

TABLE 32

Place of Residence, Married and Unmarried workers  
(All workers)  
Big Horn and Decker Mines  
(percent)

Place of Residence	Married	Unmarried
Sheridan	78.9	90.2
Dayton	6.6	5.8
Ranchester	6.5	1.6
Bighorn	1.3	0.8
Banner	0.0	0.8
Story	3.9	0.0
Parkman	0.0	0.8
Buffalo	0.7	0.0
Wyola	0.2	0.0
Wyarno	0.5	0.0
Other Wyoming	0.5	0.0
Other Montana	0.9	0.0
TOTAL	100.0	100.0
Number	(586)	(126)
NONRESPONSES = 1 (number)		

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

Table 32 shows the residential distribution of married and unmarried workers. The principal pattern that emerges is that unmarried workers overwhelmingly lived in Sheridan, whereas married workers were both more widely scattered and lived in a larger number of places. This may show a preference or merely reflect the availability of certain types of housing in each area (see Table 33).

TABLE 33  
Type of housing, Married and Unmarried workers  
(All workers)  
Big Horn and Decker Mines  
(percent)

Type of Housing	Married	Unmarried
Single-family Home	80.6	66.4
Mobile Home	12.5	16.0
Apartment	4.6	12.8
Townhouse/Condominium	2.0	4.0
Motel	0.2	0.8
RV/Camper	0.2	0.0
TOTAL	100.0	100.0
Number	(585)	(125)

NONRESPONSES<sup>a</sup> = 2  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes workers with no spouse.

#### Discussion:

Table 33 shows the distribution of housing type among married and unmarried workers. Again, the data indicate a concentration of married workers in single-family homes. Singles were more likely than married workers to live in mobile homes, apartments and townhouse/condominiums (although two-thirds of unmarrieds were residing in single-family homes).

TABLE 34

Number of Children in Household, Married and Unmarried workers  
(All Workers)  
Big Horn and Decker Mines  
(percent)

Number of Children	Married	Unmarried
None	29.5	71.8
One	22.2	11.3
Two	31.5	11.3
Three	12.5	3.2
Four	3.6	2.4
Five	0.9	0.0
TOTAL	100.0	100.0
Number	(577)	(124)

NONRESPONSES = 12  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

The distribution of children among married and unmarried workers shows the vast majority of children living with married workers; of the 871 children in worker households, only 6.2 percent live in households where the worker is not currently married. It should be noted that these data represent the responses of the Big Horn and Decker mine workers who were overwhelmingly male. (Since the majority of single-parent households are headed by women, these data may underestimate the number of workers' children who are living in single-parent households.)

TABLE 35

Employment Status of Spouse by Education of worker  
(All Married workers)  
Big Horn and Decker Mines  
(percent)

Employment Status of Spouse	Education Level of Worker			
	Less than High School	High School Graduate or GED	Some College/ Voc. School	College Graduate or More
Employed	52.4	39.8	46.7	64.8
Student	0.0	1.1	0.9	0.8
Nonemployed	47.6	59.1	52.4	34.4
TOTAL	100.0	100.0	100.0	100.0
Number	(42)	(176)	(229)	(125)

NONRESPONSES<sup>a</sup> = 141  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes workers with no spouse.

#### Discussion:

The next three tables present information about the employment characteristics of workers' spouses.

As pointed out earlier, the incidence of working wives was relatively low among these workers, suggesting the support of traditional values which is common in this geographic region. It should be noted again that men are included as spouses in these data though their numbers are small, given the 9:1 male to female ratio of the workforce.

Table 35 suggests data that are similar to national trends. For families with lower educational levels (here assuming somewhat equal levels of education between spouses), more than half the married workers had spouses that worked. Among high school graduates the proportion of working spouses dropped to slightly over one-third. For workers with some college, the proportion rose to 47 percent, and for workers with a college degree or higher, 65 percent reported that their spouses worked. Less than 1 percent of the spouses were students at the time of the survey.

TABLE 36

Employment Status of Spouse by Number of Children in Household  
(All Married workers)  
Big Horn and Decker Mines  
(percent)

Employment Status of Spouse	Number of Children						Total All workers
	None	One	Two	Three	Four	Five	
Employed	62.1	49.5	41.5	45.2	30.0	0.0	49.4
Student	1.2	0.0	1.7	0.0	0.0	0.0	0.9
Nonemployed	36.7	50.4	56.7	54.8	70.0	100.0	49.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	(169)	(127)	(178)	(73)	(20)	(5)	(572)

NONRESPONSES<sup>a</sup> = 139  
(number)

Source: Mountain West Research-North, Inc., 19982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes workers with no spouse.

#### Discussion:

As shown in Table 36, spouses in households with no children were more likely to be employed outside the home than were spouses in households with children. However, over 40 percent of the spouses in households with up to three children were employed, indicating considerable labor force participation by married women with children under the age of eighteen.

TABLE 37

Employment Status of Spouse by  
Presence of Children under Age 5  
(All workers)  
Big Horn and Decker Mines  
(percent)

Employment Status of Spouse	Presence of Children under Age 5 in the Home		Total All Workers
	No	Yes	
Employed	58.0	34.3	49.4
Student	0.8	0.9	0.9
Nonemployed	41.2	64.8	49.7
TOTAL	100.0	100.0	100.0
Number	(364)	(210)	(577)

NONRESPONSES<sup>a</sup> = 139  
(number)

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

<sup>a</sup>Includes workers with no spouse.

#### Discussion:

An interesting pattern emerges among employed and nonemployed spouses with respect to number of children at home. There is a distinct relationship; that is, in homes with more children, the percent of working spouses is lower. But the relationships are not linear.

Table 37 supports this age factor somewhat. Fifty-eight percent of spouses who had no preschoolers at home were working, compared to only 23 percent of the spouses with preschoolers. These data indicate a demand for child care by worker families.



## 6. PARTICIPATION IN RECREATIONAL ACTIVITIES

Chapter 6 presents the survey data on the frequency with which workers and their families participate in a variety of recreational activities. The data are presented for each of the five subgroups of workers as well as for the sample as a whole.

The data present workers' responses to the question: "Approximately how many times in the past year did you and/or your family participate in the following [activities]?" Distinction was made between "no participation" and "no response" for these questions.

TABLE 38

Nonparticipation in Recreational Activities  
Big Horn and Decker Mines  
(percent)

	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support
Hunting	23.3	19.7	35.3	20.3	26.7	25.4
Fishing	16.0	15.3	19.6	15.2	11.1	26.4
Camping	23.3	25.5	27.5	23.2	17.6	18.4
Skiing	65.4	66.4	58.8	75.4	53.3	44.8
Hiking	51.2	58.4	54.9	58.0	28.9	46.3
Off-Road Vehicles	57.2	60.6	56.9	52.2	55.6	79.1
Snowmobiling	58.1	65.0	74.5	71.0	84.4	80.1
Baseball	64.5	70.1	74.5	72.5	35.6	65.7
Football	69.7	67.9	76.5	73.9	53.3	80.1
Basketball	73.8	72.3	76.5	73.2	71.1	83.6
Golf	81.1	84.7	72.5	83.3	77.8	76.1
Tennis	83.4	81.8	86.3	87.7	77.8	76.1
Handball/Racquetball	77.8	75.2	68.6	81.9	73.3	80.6
Other Indoor Recreation	63.1	59.9	68.6	71.0	48.9	56.7
Soccer	87.4	81.0	86.6	92.0	82.2	89.6
Total Number	713	137	51	321	137	67
NONRESPONSES (number)	0	0	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion:

As tables 38-40 show, a high proportion of workers (more than 75 percent) indicated that they or members of their families participated in hunting, fishing, and camping activities during the past year. On the other hand, most workers (over 80 percent) indicated that they did not engage in golfing, tennis, and soccer. Somewhat less than half of the workers reported snowmobiling and off-road vehicle utilization over the past year. Patterns were generally similar across all groups, though some group specific characteristics can be seen.

TABLE 39

Participation One to Ten Times per Year  
in Recreational Activities  
Big Horn and Decker Mines  
(percent)

	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support
Hunting	51.2	52.6	49.0	52.9	44.4	55.2
Fishing	46.4	46.0	54.9	44.2	46.7	50.7
Camping	51.9	42.4	56.8	54.3	51.1	58.2
Skating	23.4	16.1	35.3	17.4	31.1	41.8
Hiking	33.5	21.2	27.5	31.9	51.1	35.8
Off-Road Vehicles	22.6	13.9	21.5	29.0	22.2	11.9
Snowmobiling	14.9	16.8	19.6	15.2	11.2	13.4
Baseball	12.1	7.3	9.8	9.4	22.2	16.4
Football	22.6	14.6	23.5	20.3	40.0	13.4
Basketball	14.3	6.5	15.7	16.7	17.8	10.4
Golf	10.7	1.4	15.7	12.4	11.1	16.4
Tennis	8.3	4.3	9.8	7.2	11.1	14.9
Handball/Racquetball	7.3	5.1	9.6	6.5	8.9	10.4
Other Indoor Recreation	6.7	5.8	11.8	5.8	6.7	9.0
Soccer	3.2	1.5	7.8	2.2	4.5	5.9
Total Number	713	137	51	321	137	67
NONRESPONSES (number)	0	0	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

#### Discussion (cont.):

As shown in Table 40, nearly one-quarter of all workers reported participation in hunting, fishing, camping, and baseball more than ten times during the past year. Football, tennis, golf, and soccer showed fewer employees who participated with great frequency.

TABLE 40  
Participation More than Ten Times per Year  
in Recreational Activities  
Big Horn and Decker Miners  
(percent)

	Total All Workers	Big Horn Miners	Big Horn Support	Decker Miners	Decker Support	Sheridan Support
Hunting	25.7	27.7	15.7	26.8	28.9	16.4
Fishing	37.6	38.7	25.5	40.6	42.2	20.9
Camping	24.7	32.1	15.7	22.5	31.1	13.4
Skiing	11.2	17.4	5.9	7.2	15.6	13.4
Hiking	15.1	20.4	17.6	10.1	20.0	17.9
Off-Road Vehicles	19.9	25.5	21.6	18.8	22.2	9.0
Snowmobiling	11.4	18.2	5.9	13.8	4.4	4.5
Baseball	23.4	22.6	15.7	18.1	42.2	17.9
Football	7.7	17.5	0.0	5.8	6.7	4.5
Basketball	11.8	21.2	7.8	10.1	11.1	6.0
Golf	8.3	13.9	11.6	4.3	11.1	7.5
Tennis	8.1	13.9	3.9	5.1	11.1	9.0
Handball/Racquetball	14.7	19.7	21.6	11.6	17.8	9.0
Other Indoor Recreation	30.2	34.3	19.6	23.2	44.4	34.3
Soccer	9.4	17.5	5.9	5.8	13.3	4.5
Total Number	713	137	51	321	137	67
NONRESPONSES (number)	0	0	0	0	0	0

Source: Mountain West Research-North, Inc., 1982.

Note: Numbers based on weighting procedure; see discussion in Chapter 9.

## 7. COMPARISON BETWEEN THE 1982 AND 1977 WORKER SURVEYS

The purpose of this section is to very briefly compare the data obtained in this survey to data from a survey conducted with mine workers at Decker, Montana in 1975 (Wieland, Leistritz, and Murdock 1977). Information on workers that proved comparable included age, marital status, education, type of housing, and housing preference for workers dissatisfied with present housing. Each topic is discussed briefly below.

It should be noted that in the original analyses, the same categories of data were not used. Some combining and/or recalculating was necessary to make comparisons. Thus, the conclusions are very general. Also, it appears that during the 1975 survey, job classifications were somewhat different. While some support personnel were counted (clerical, supervisory, and service), few professional and administrative people were employed. By the 1982 survey, reclamation jobs (heavily professional and administrative) were affecting the data and must be taken into account when comparing the two analyses.

### 7.1 Age

There is quite a difference between the two surveys with respect to age of workers. The 1975 survey showed a much higher percentage of younger workers (62 percent under 35 years as opposed to 34 percent under 35 years in 1982). This difference is especially great in the under-25 years category (21 percent versus 3 percent). This may reflect stability among the mines' work forces, with a concomitant aging of the overall workforce.

### 7.2 Marital Status

Differences in marital status between the two surveys are slight. Slightly fewer married workers (85 percent, 86 percent), fewer single workers (8 percent, 11 percent), but more widowed/divorced/separated workers were found in 1982 than in 1975.

### 7.3 Education

Comparison of education between the two surveys showed a trend toward higher levels of education in 1982 over 1975. Decreases occurred in the "less than high school" category (10 percent in 1975, 7 percent in 1982) and among high school graduates (39 percent in 1975, 33 percent in 1982), while increases occurred in the "some college"/technical school category (36 percent in 1975, 41 percent in 1982) and in the proportion with a "college degree or higher" (16 percent in 1975, 19 percent in 1982). These figures may also be affected by the age characteristics of the work force.

### 7.4 Housing Type

Workers' housing type changed somewhat between the 1975 survey to the 1982 survey. Residence in single-family homes decreased slightly (66 percent in 1975, 60 percent in 1982), single-home ownership decreased significantly (57 percent in 1975, 45 percent in 1982), while single home rental increased (9 percent in 1975, 16 percent in 1982). Residence in apartments increased substantially (4 percent in 1975,

11 percent in 1982) as did mobile home living (12 percent in 1975, 12 percent in 1982). Particularly, more workers were living in owner-occupied mobile homes than before (12 percent in 1975, 21 percent in 1982). Use of other housing types did not change significantly.

#### 7.5 Housing Preference

In making comparisons of housing preference, it should be noted that the 1982 data are aggregated for both the Big Horn and Decker mines, while the 1975 data were for the Decker mine only.

There are no real differences between the two surveys; the same percentage of workers preferred their own single home (95 percent), and nearly the same percentage preferred their own mobile home (4 percent, 3 percent). Housing preferences did not alter significantly between 1975 and 1982.

#### 7.6 Conclusions

Based on the variables that could be compared between the two surveys, there appears to be a high degree of congruence between the two sets of data. Indeed, the differences in age, marital status, and education can be accounted for by the larger numbers of professional and administrative personnel joining the mining work force between the earlier and later surveys, and by the time lapse between them, during which a relatively stable work force would be expected to age. Housing differences may reflect changes in the economy and the cost and availability of single-family dwellings (which remained the preference of the vast majority of workers).

These brief comparisons, then, give credence to the data here and to the analyses set forth in this report as well as to the utilization of these data in projections of worker characteristics for additional mines in the Decker area.

## 8. SUMMARY AND CONCLUSIONS

The data presented in Chapter 2 portray the mine workers as a relatively homogenous group with several characteristics: male with an average age of 30-34, having a high school diploma often with some college education, usually in a mechanical/operative position, not a member of an Indian tribe, living in the Sheridan area.

Differences among the workers within these variables were generally not found between the miners at the Big Horn and Decker mines; some clear differences were found, however, between miners and support personnel. Support personnel exhibited a higher proportion of younger, better educated, more recent in-migrants than did the miners.

The data presented in chapter 3 also indicated similarities between workers at both mines, portraying somewhat traditional values with respect to marital status, household composition, and working spouses. Most workers were married and lived in nuclear families. A relatively high proportion had spouses who did not work. Again, there were substantial differences between miners and support personnel, with more singles, fewer children, and more two-income families among support personnel. This agrees with the age-education profiles discussed in Chapter 2.

While all personnel overwhelmingly preferred single-family homes, some differences were seen among workers at the different sites. Newer types of housing (town-houses and condominiums) seemed to be accepted, but at the time of the survey were not widely utilized.

Chapter 4 discussed the occupational and geographic mobility of the workers and examined data on home-to-work commuting patterns. Decker area workers were relatively stable in their occupations, although some geographic and occupational movement was seen. Most of the workers had lived in Wyoming prior to their employment at the mines. The differences in geographic mobility among the different sites (and between miners and support staff) arose primarily from the young, former students, who had recently moved into the area to fill technical, managerial, or professional positions. (A higher percentage of these former students were employed at Decker than at Big Horn Mine.)

Few workers had worked at other mines in the area; almost none of the Decker support personnel had done so.

Most workers either drove their own vehicles to work or, if the company provided it, company vehicles. A surprising 60 percent carpooled. (Many in company vehicles met at Sheridan and carpooled to the Big Horn Mine.) More Decker employees carpooled and rode in each car than workers at other locations.

Chapter 5 examined three key variables: length of residence in the community, marital status, and working spouses. In each case, some interesting patterns appeared.

The most recurring and pronounced patterns were attributed to, as before, an increased proportion of workers who were young, single, higher-educated, newer in the community, city-dwelling, and with a higher proportion of working spouses.

Newcomers to the area presented a somewhat different profile than old-timers, and thus perhaps made different demands upon the community. They were more likely to be single and less likely to be divorced or separated. They were more likely to hold high-status jobs (except for administrative positions), to be higher educated (over half were college graduates), and to live in Sheridan city. They tended to have fewer children (although this was partly a function of their age), were slightly more accepting of apartments, mobile homes, townhouses and condominiums, and were much more likely to have working spouses.

Similar differences were observed between married and unmarried workers. Fewer of the unmarried workers were employed in mechanical/operative jobs than expected. Unmarried workers were more likely to be in professional or technical positions, were much more likely to live in Sheridan, and were much more accepting of mobile homes, apartments, townhouses, and condominiums than were the married workers. As expected, unmarried workers had fewer children than did their married counterparts, but 6.2 percent of all children in worker's households did live in single-parent homes.

The incidence of working spouses was higher among better-educated workers, higher among families with fewer children, and lower among families with preschoolers in the home. There were, however, working spouses in 43.7 percent of homes with children, and 22.5 percent of homes with preschoolers. This should be noted in planning for the impacts of mining upon a community.



## 9. SURVEY METHODOLOGY

### 9.1 Introduction

The mine worker surveys were conducted to provide data for the mine worker profile. The survey at the Big Horn Mine and the Sheridan Administrative Office was conducted with a self-administered questionnaire; the survey of workers at the Decker mines was administered by telephone interviews.

### 9.2 Self-administered Survey

The self-administered survey attempted to census the employees of Peter Kiewit Sons, Inc. Big Horn Mine and support staff in Sheridan, Wyoming. Responding workers totaled 255 out of a possible 308.

#### 9.2.1 Survey administration

PKS's environmental permit coordinator spoke to the mine foreman about the survey prior to the day it was administered. The day the survey was conducted, each foreman at the mine site was given a packet containing a questionnaire for each member of his crew (shown in Figure 2), pencils, and a memo from the permit coordinator that stated the study's purpose and requested the worker's participation. The workers were also asked to return the forms at the end of their shift. In addition, the personnel manager spoke with most of the foremen individually on both the day and swing shifts to remind them of the study's purpose.

At the Sheridan office, the permit coordinator gave each employee a questionnaire briefly explained the purpose of the study, and requested he complete the form and return it the same day, October 22, 1982.

The day shift and swing shift employees received their questionnaires on October 22; the graveyard shift received theirs on October 25 because the graveyard shift does not operate on Friday.

The personnel director and permit coordinator contacted the employees who were present on October 25, but absent on the day their shift was surveyed, and requested they complete a questionnaire. These forms were returned to Mountain West along with the graveyard shift forms on October 27.

The response rate is stated in the response table.

### 9.3 Telephone-administered Survey

Because it was not possible to conduct the self-administered census survey at the Decker mines, a sample of employees was chosen from the Decker mines employee roster, and a telephone survey was conducted. At the time of the survey, the mines employed 515 people.

Mine  
Number

## MINE WORKER SURVEY

1. What is your present occupation (skill or craft)? \_\_\_\_\_
2. What was your occupation (skill or craft) prior to your present mining occupation?  
\_\_\_\_\_
3. Where do you live during the work week?  
\_\_\_\_\_  
city or place \_\_\_\_\_ state \_\_\_\_\_
4. Is this your full-time residence? (circle your answer)  
1. YES      2. NO
5. Where did you live immediately prior to your employment here?  
\_\_\_\_\_  
city or place \_\_\_\_\_ state \_\_\_\_\_
6. How long have you lived in the southeastern Montana/northeastern Wyoming area?  
NUMBER OF YEARS \_\_\_\_\_
7. Have you worked at any other coal mines in this area? (circle your answer)  
1. YES      2. NO
8. Immediately prior to your present employment where were you employed? (circle your answer)  
1. BIG HORN COUNTY      4. SHERIDAN COUNTY  
2. BILLINGS/LAUREL      5. OTHER WYOMING COUNTY  
3. OTHER MONTANA COUNTY (specify) \_\_\_\_\_  
6. OTHER STATE (specify) \_\_\_\_\_  
7. NOT EMPLOYED
9. How do you travel to and from work every day? (circle your answer)  
1. PERSONAL VEHICLE      2. BY COMMERCIAL VAN OR BUS  
3. OTHER (specify) \_\_\_\_\_
10. Are you car pooling (in a personal vehicle) to work? (circle your answer)  
1. YES      2. NO
11. How many people on average are in your car pool, including yourself? (circle your answer)  
1. NO CAR POOL, TRAVEL ALONE      4. 3 PEOPLE  
2. NO CAR POOL, COMPANY OR      5. 4 PEOPLE  
COMMERCIAL TRANSPORTATION      6. 5 PEOPLE  
3. 2 PEOPLE      7. 6 or MORE
12. What type of housing do you live in during the work week? (circle your answer)  
1. SINGLE FAMILY HOME      5. RV CAMPER  
2. MOBILE HOME      6. MOTEL  
3. DUPLEX/4-PLEX/APARTMENT      7. OTHER (specify) \_\_\_\_\_  
4. TOWNHOUSE/CONDOMINIUM
13. Do you own or rent this housing? (circle your answer)  
1. OWN      2. RENT
14. Is your work week housing your preferred housing type? (circle your answer)  
1. YES      2. NO      My preference is \_\_\_\_\_

Source: Mountain West Research-Norton, Inc. 1980.

15. Are you now: (circle your answer)
- |   |                       |
|---|-----------------------|
| 1. SINGLE                               | 3. DIVORCED/SEPARATED |
| 2. MARRIED (or equivalent relationship) | 4. WIDOWED            |
16. Which of the following best describes your work week household? (circle your answer)
1. FAMILY/COUPLE (Parents and children, or couples)
  2. EXTENDED FAMILY (Parents or couples, children, plus other relatives)
  3. FAMILY/COUPLE PLUS UNRELATED ADULTS
  4. SINGLE PERSON OR UNRELATED ADULTS
  5. RELATED SINGLES (brother, cousins, etc.)
17. How many people live in your household (at the place you stay during the work week)?
- MALES (number) \_\_\_\_\_ FEMALES (number) \_\_\_\_\_
18. How many people in the household are usually employed full-time including yourself?
- MALES (number) \_\_\_\_\_ FEMALES (number) \_\_\_\_\_
19. What is the current occupation of your spouse or partner?
- \_\_\_\_\_
2. NO SPOUSE OR PARTNER
20. How many children (in each age group) are in the household?
- |                        |                         |
|------------------------|-------------------------|
| 1. NO CHILDREN         | 4. 11 TO 14 YEARS _____ |
| 2. 0 TO 5 YEARS _____  | 5. 15 TO 18 YEARS _____ |
| 3. 6 TO 10 YEARS _____ |                         |
21. What is your current age?
- \_\_\_\_\_
22. What is the current age of your spouse or partner?
- \_\_\_\_\_
2. NO SPOUSE OR PARTNER
23. Are you: (circle your answer)
1. MALE      2. FEMALE
24. What is your highest education level? (circle your answer)
- |                                |                                   |
|--------------------------------|-----------------------------------|
| 1. LESS THAN HIGH SCHOOL       | 3. SOME COLLEGE VOCATIONAL SCHOOL |
| 2. HIGH SCHOOL GRADUATE OR GED | 4. COLLEGE GRADUATE OR MORE       |
25. Are you a member of: (circle your answer)
- |                   |                                |            |
|-------------------|--------------------------------|------------|
| 1. THE CROW TRIBE | 2. THE NORTHERN CHEYENNE TRIBE | 3. NEITHER |
|-------------------|--------------------------------|------------|
26. Approximately how many times in the past year did you and/or your family participate in the following?
- |                         |                               |
|-------------------------|-------------------------------|
| HUNTING _____           | BASEBALL _____                |
| FISHING _____           | FOOTBALL _____                |
| CAMPING _____           | BASKETBALL _____              |
| SKIING _____            | GOLF _____                    |
| HIKING _____            | TENNIS _____                  |
| OFF-ROAD VEHICLES _____ | HANDBALL/RACQUETBALL _____    |
| SNOWMOBILING _____      | OTHER INDOOR RECREATION _____ |
|                         | SOCCER _____                  |

### 9.3.1 Sampling

To provide a sample which could estimate the proportion of workers in the 18-to-25-year age group with an error of 5 percent or less (based on the 1975 survey data), a target sample size of 168 was calculated. Allowing for nonresponses, a sample of 200 was determined adequate to provide 175 completed telephone interviews. The Decker Coal Company provided a complete list of its employees to be used as the sample universe. One hundred and ninety-seven out of the 515 employees were chosen from the list by systematic random sampling. The random starting point was chosen by using a random number table.

### 9.3.2 Preparation of Interview Schedule

A verbal version of the self-administered questionnaire was prepared for use by telephone. The wording of the items was kept as similar to the self-administered survey as practicable. An introduction was added that explained who was conducting the survey and why. A call record was attached to each interview schedule to be completed for each respondent. Each respondent's name and telephone number were noted on a call record. The day and hour of each attempt to reach the respondent were recorded to reduce the number of callbacks necessary. Six attempts were made to contact the respondents who were not interviewed.

This version of the interview schedule was pretested over the telephone by interviewers. Hypothetical responses from mine employees were used to determine the final wording of the questions and transitions.

### 9.3.3 Interviewer Training

The interviewers were trained through this practice interviewing. In addition to hypothetical answers to the items on the interview schedule, they were asked hypothetical questions about the survey and its purpose as well as clarification questions about specific items. The answers to these hypothetical questions were provided to each interviewer in order to ensure consistent interviewer responses. The practice questionnaires were edited for accuracy and completeness. Errors were reviewed with the interviewer.

### 9.3.4 Advance Letter

A letter from the Montana Department of State Lands was sent to each household selected in the sample a few days before interviewing began. The letter explained the usefulness of the study, explained the importance of participation, and assured them that their responses would be confidential.

### 9.3.5 Survey Administration

Interviewing began on November 1, 1982 and ended on November 5, with 183 completed interviews. Interviewers requested to speak with the employee listed on their call record. If that person was not available, either the spouse or another adult member of the household was interviewed unless the interviewer was requested to return the call to speak directly with the employee. Calls were made in the morning, afternoon, and evening.

#### 9.3.6 Editing

The interview schedules were checked for accuracy and completeness during each interviewing session. Again, any errors were then discussed with the interviewer to provide the needed information. In a few cases, the respondent was contacted again to provide an answer.

The response rate is listed in the response table.

#### 9.4 Response Rate

The response rates for the two surveys are shown in Table 41. Overall, a total of 438 questionnaires were completed, resulting in a total response rate of 86.2 percent. The self-administered survey resulted in a response rate of 83.0 percent while the telephone survey achieved a response rate of 92.0 percent.

TABLE 41

Response Rate  
Mine Worker Surveys

Survey	Sampling Universe	Sample Size	Number Completed	Response Rate
Self-administered (Big Horn Mine and Sheridan Support)	308	308	255	83.0%
Telephone Administered (Decker Mines)	515	200	183	92.0%
Total	823	508	438	86.2%

9.5 Weighting Techniques

Because it was desirable to combine the data from the two surveys to determine the characteristics of all PKS mine-related employees in the Decker area mines, it was necessary to develop a weighting scheme to account for the different sampling characteristics that were utilized. To do this, the work force and survey data were disaggregated into five sites: Big Horn miners, Big Horn support, Decker miners, Decker support, and Sheridan support. Based on the ratio of total workers (work force) to sampled workers at each of these sites, a weighting system was calculated to adjust the survey data to represent the work force characteristics.

In all the analyses, Big Horn miners, Big Horn support and Sheridan support data received a weighting of 1.0, representing the census base of these data. The survey data for the Decker miners were weighted by a factor of 2.326, and the data for the Decker support staff were weighted by a factor of 3.044. With these weights, the overall data accurately represent the total work force at these five sites.<sup>1</sup>

9.6 Data Analysis

SPSS (Statistical Package for the Social Sciences) was utilized in data analysis. Frequencies were developed for the total group of workers and for each of five subgroups: Big Horn miners, Big Horn support personnel, Decker miners, Decker support personnel, and Sheridan support personnel. Most variables were utilized as is, while some required data transformations or reevaluation (such as age from single numbers into group, etc.).

<sup>1</sup>For example, if five workers in the sample of Decker support staff were administrators (11 percent of total Decker support sample), it is expected that in the Decker support work force there were actually 15 administrators (11 percent of the total Decker support work force).

In addition, crosstabulations between pairs of variables were performed on all workers combined to further facilitate analyses. Statistics were not evaluated, rather, patterns and trends were examined between mine sites and between miners and support groups. The emphasis was on descriptive data.

#### 9.7 Data Quality and Statistical Validity

Considerable care was exercised in the design and execution of the surveys to assure high quality, reliable results. The high response rate (see Table 41) and the rigorous sampling and weighting procedures, as well as validation of survey results through comparisons with other surveys and known worker characteristics, indicate that these data can be utilized with considerable confidence. The quality of the data appears high.

For the unweighted sample, for example, the proportion of Decker employees (miners and support staff) in the 18-to-25-year age category was found to be 7 percent, reflecting the older age of the workforce in 1982 than in 1975. The standard error of estimate for this statistic was  $\pm 0.018$  ( $\pm 1.8$  percent), making the 95 percent confidence interval for the proportion of the population in this age category from 3.5 to 10.5 percent, or the observed value  $\pm 3.5$ .

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